

DaimlerChrysler AG

Patent claims

1. A gas sensor (1) for detecting a gas component in the exhaust gas of an internal combustion engine, having a control and evaluation unit and a sensor unit (2) with an electrode structure (20) with a first terminal (4) and a second terminal (5), it being possible for an electrical measured value that is present between the first terminal (4) and the second terminal (5) of the electrode structure (20) to be supplied to the control and evaluation unit to determine the concentration of the gas component, characterized in that the control and evaluation unit applies a bias voltage (17) to the first terminal (4) and/or to the second terminal (5) of the electrode structure (20), it being possible for the level of the bias voltage (17) to be set in dependence on a characteristic of the sensor and/or in dependence on a loading of the sensor.
2. The gas sensor as claimed in claim 1, characterized in that the level of the bias voltage (17) can be set in dependence on a reference value of the measured variable.
3. The gas sensor as claimed in claim 1 or 2, characterized in that the level of the bias voltage (17) can be set in dependence on the sensitivity of the sensor unit (2).
4. The gas sensor as claimed in one of the preceding claims, characterized in that the level of the bias voltage can be set in dependence on an electrical reference variable that can be measured between the

electrode structure (20) of the sensor unit and a circuit of the exhaust gas sensor (1).

- 5 5. The gas sensor as claimed in claim 4, characterized in that the gas sensor (1) has a circuit (6, 8, 9) for temperature measurement, covered by an insulating layer (3), the sensor unit (2) being applied to the insulating layer (3) and it being possible for the level of the bias voltage (17) to  
10 be set in dependence on an electrical reference variable that can be measured between the electrode structure (20) of the sensor unit (2) and the circuit (6, 8, 9) for temperature measurement.
- 15 6. The gas sensor as claimed in claim 1, characterized in that the level of the bias voltage (17) can be set in dependence on the operating time of the gas sensor (1).
- 20 7. The gas sensor as claimed in one of the preceding claims, characterized in that the bias voltage (17) has a positive polarity in relation to an operating voltage of a circuit of the exhaust gas sensor.
- 25 8. The gas sensor as claimed in one of the preceding claims, characterized in that the exhaust gas sensor (1) is designed for sensing the gas component ammonia.
- 30 9. A method for operating an exhaust gas sensor (1) to determine the concentration of a gas component in the exhaust gas of an internal combustion engine, the exhaust gas sensor (1) having a gas-sensitive sensor unit (2) with an electrode structure (20)  
35 with a first terminal (4) and with a second terminal (5), and an electrical measured variable correlating with the concentration of the gas

component being picked up between the first terminal (4) and the second terminal (5) of the electrode structure (20), characterized in that a bias voltage (17) is applied to the first terminal (4) and/or the second terminal (5) of the electrode structure (20), the level of the bias voltage (17) being set in dependence on a characteristic of the sensor and/or in dependence on a loading of the sensor.

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10. The method as claimed in claim 9, characterized in that the level of the bias voltage (17) is set in dependence on the zero-point drift of the electrical measured variable

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11. The method as claimed in claim 9 or 10, characterized in that the level of the bias voltage (17) is set in dependence on a sensitivity drift of the exhaust gas sensor (1).

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12. The method as claimed in one of claims 9 to 11, characterized in that the level of the bias voltage (17) is set at predeterminable points in time.

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13. The method as claimed in one of claims 9 to 12, characterized in that the level of the bias voltage (17) is set every nth time the exhaust gas sensor (1) is switched on.

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14. The method as claimed in one of claims 9 to 12, characterized in that the bias voltage (17) is set positively in relation to an operating voltage of a circuit of the exhaust gas sensor (1) that is electrically insulated from the sensor unit (2).